

Name: _____

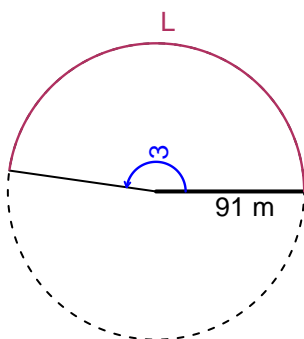
Date: _____

Trig Final (TEST v673)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

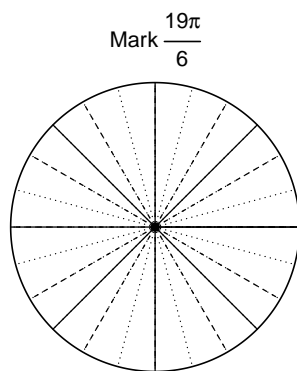
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 91 meters. The angle measure is 3 radians. How long is the arc in meters?

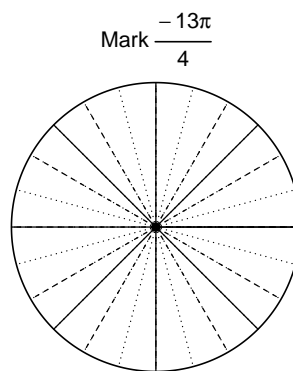


Question 2

Consider angles $\frac{19\pi}{6}$ and $\frac{-13\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{19\pi}{6}\right)$ and $\sin\left(\frac{-13\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\cos(19\pi/6)$



Find $\sin(-13\pi/4)$

Question 3

If $\sin(\theta) = \frac{-24}{25}$, and θ is in quadrant III, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 3.15$ meters, an amplitude of 5.37 meters, and a frequency of 2.02 Hz. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).